



United States Department of Agriculture



# Conservation Trees and Shrubs for Montana



Montana

**Natural  
Resources  
Conservation  
Service**

[mt.nrcs.usda.gov](http://mt.nrcs.usda.gov)

## Introduction

When you are contemplating which tree or shrub species to plant, your first thought might be, “Will this plant thrive here?” You will want to know if the plant will tolerate the temperatures, moisture, and soil conditions of the area.

This publication focuses on identifying and describing trees and shrubs capable of tolerating Montana’s severe climatic and environmental conditions, the site conditions where they are best adapted to grow, and some of the benefits each tree and shrub provides. When looking at each of the provided attributes, consider these two points. First, these characteristics and traits are approximations, and variability within a species is quite common. Second, plant performance varies over time as a plant grows and matures. For example, even “drought tolerant” species require adequate moisture until their root systems become well established.

Landowners and managers, homeowners, and others plant trees and shrubs for many reasons, including: windbreaks for livestock protection and crop production, shelterbelts for homes and farmsteads to reduce wind speed and conserve energy usage, living snow fences to trap and manage snow, hedgerows as visual and noise screens, landscaping for beautification around homes and parks, wildlife habitat and food, blossoms for pollinators such as bees, streamside and wetland restoration, reforestation following timber harvest or wildfire, and fruit and berries for human use to name just a few.

Montana encompasses 93.3 million acres with temperature extremes ranging from -50 degrees F in northeast Montana, to 110 degrees F in summer in southcentral Montana. Annual precipitation varies from more than 60 inches in northwest Montana to six inches in the desertic basin of southcentral Montana. Soils also vary considerably across the state from deep loams and subirrigated soils with high organic matter to soils with high salinity or low water holding capacity, and everything in between. Because Montana is so variable in its climatic and soil conditions affecting plant growth, this publication outlines the factors to consider when selecting trees and shrubs for your needs and location.

This publication is best used before or while developing a tree or shrub conservation planting plan. The ideal species can then be selected to achieve the desired conservation goal. For example, not only are the soil and climate factors important, but be sure to consider the 20-year height and crown width when calculating the between and within row spacing of a shelterbelt or windbreak. Also note that only species native within the borders of Montana are classified as native in this publication and species that are regulated by Montana state noxious weed law are not included.

When saline soils are mentioned, it refers primarily to high amounts of calcium and magnesium salts in the soil water. Alkaline soils refer to soils with a high pH versus soils which are acidic, with a low pH. Most soils in Montana are slightly alkaline or neutral, although pH extremes do exist.

Design requires some degree of expertise, and numerous publications, videos, and professionals are available to assist you. Please note it is important to begin the planning process early, maybe a year or more in advance of planting! Site preparation, plant availability, construction schedules, and other factors often require substantial lead time.

Trees and shrubs provide tremendous diversity, beauty, and benefits to an already beautiful Montana landscape. Please contact your local NRCS and Conservation District office, County Extension office, or state of Montana DNRC urban forester if you have any questions about designing a tree planting or selecting and ordering the appropriate trees or shrubs for your particular need.

## Common Problems:

### Drought

Individual trees vary widely in their resistance to drought. However, in years of low rainfall, many tree species can be substantially weakened or killed by drought. Deciduous trees appear to die from the top down, have small, off-colored leaves, and narrow growth rings. Conifers generally die from the bottom up when subjected to drought. Drought and any factor that weakens a tree may allow invasion by many secondary fungi and insects.



### Leaf Scorch

When adequate temperature and moisture suddenly turns hot and dry, leaf scorch may occur. Affected trees generally have yellow or brown leaf edges. The affected leaves may remain on the tree or the leaves may drop early. Watering during hot, dry weather may prevent or alleviate this problem.

### Fall freeze damage

Plants still growing actively in the fall may be damaged by unseasonably cold periods. This damage occurs before the plant has moved into its winter rest as indicated by development of fall color and normal leaf drop. Frozen leaves often hang on the tree until spring. This may cause little to no damage or kill the entire tree.

Planting trees and shrubs adapted to the climate is very important. Also, allowing trees to grow at a slower rate by not pushing them with fertilizer and excessive watering can minimize winter freeze damage.

### Winter freeze damage

Chinooks (warm winter winds) may cause winter thaw periods wherein daytime temperatures exceed 60 F for several days at a time. Non-adapted trees may begin growing again as though it was spring, only to succumb to winter injury when temperatures drop again. In such cases, only the main trunk and scaffold branches may be viable in the spring.

Planting species adapted to changing Montana conditions can lessen chances of winter freeze damage. Marginally-hardy species should be planted in protected locations. Examples of protected locations include the north side of a house or the interior of an established shelterbelt.

### Winter desiccation

Winter desiccation is most common with evergreens. Winter sun and wind cause water loss from the needles, while roots are in frozen soil and unable to replace this water. The usual symptom is purpling or death of needles on the windward side or on the side facing the afternoon sun. Such symptoms may be more severe in newly transplanted trees that have not established a good root system. Late fall and winter watering can minimize winter desiccation.

### Sunscald

Bark on the southwest side of tree trunks may be killed by sunscald. Sunscald occurs when bark warms and thaws in the afternoon sun, then refreezes when nighttime temperatures drop rapidly.

Damage is most common on the darker-colored, smooth-barked trees such as mountainash, apple, and maple. Tree wraps can help prevent sunscald. Planting in a site that is shaded in the winter is recommended for susceptible trees.

### Frost cracking

Frost cracking is caused by extremely rapid temperature changes in bark and wood. As with sunscald, the bark and wood on the sunny side of the tree warms during the day. If a cold front moves in with a dramatic drop in temperature (i.e., from 30 F to -20 F in a very short period of time), uneven contraction of the wood causes a crack to form suddenly. Sometimes the crack sounds like a gun shot. Damage is most common in hardwood plants such as green ash. Frost cracking is not common and trees usually heal the cracks with few repercussions.



Mountain bluebird male. Bluebirds use limber pine and other trees with cavities created by woodpeckers



Canker on lodgepole pine. Cankers are caused by fungal infections



## Deciduous Shrubs



### Almond, Russian

(*Prunus tenella*)

**20-Year Height:** 4 feet

**Growth Rate:** moderate

**Growth Habit:** upright, suckering

**Drought Resistance:** good

**Wildlife Value:** excellent nesting and food source for birds

**Flowers:** abundant, pink to rose, blooms just before leaves emerge

**Other:** prefers loamy soils, introduced species



### Buffalberry, Silver

(*Shepherdia argentea*)

**20-Year Height:** 10 feet

**Growth Rate:** moderate

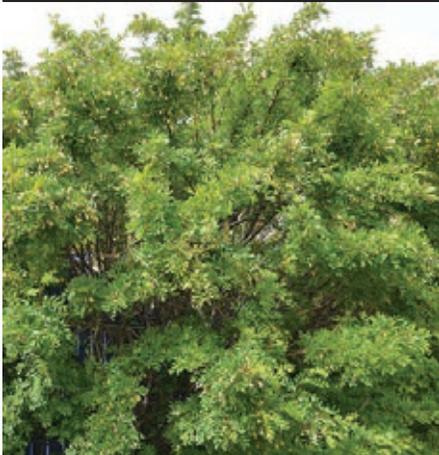
**Growth Habit:** loosely branched, thorny

**Drought Resistance:** excellent

**Wildlife Value:** ideal cover, nesting and browse; good late winter food source

**Disease:** stem decay, branch canker

**Other:** well-adapted to dry, moderately saline soils, heavy clay and subirrigated soils; red berries used for jellies; fixes nitrogen; thicket-forming, native species



### Caragana

(*Caragana arborescens*)

**20-Year Height:** 12 feet

**Growth Rate:** rapid

**Growth Habit:** erect, oval shrub

**Drought Resistance:** excellent

**Wildlife Value:** used for nesting

**Flowers:** small, showy, yellow

**Pests:** blister beetles

**Disease:** stem decay, leaf spot and branch cankers

**Other:** produces pods with multiple seeds, excellent for windbreaks, tolerant of slightly saline soils, introduced species



### Cherry, Nanking

(*Prunus tomentosa*)

**20-Year Height:** 7 feet

**Growth Rate:** moderate

**Growth Habit:** upright, semi-spreading

**Drought Resistance:** good

**Wildlife Value:** fruit for songbirds, browse

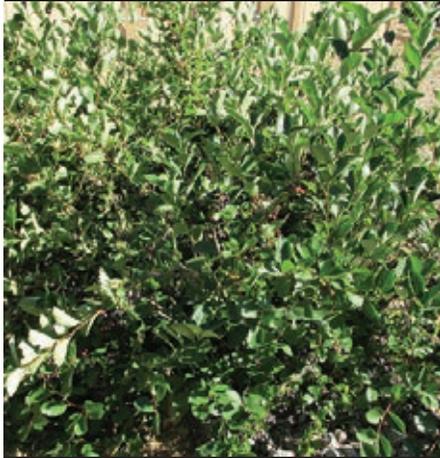
**Flowers:** small, pink

**Disease:** branch canker

**Other:** prefers loamy soils; short-lived, but will usually sprout back; excellent fruit for pies and jellies; introduced species



## Deciduous Shrubs



### Chokeberry, Black

(*Aronia melanocarpa*)

**20-Year Height:** 6 feet

**Growth Rate:** moderate

**Growth Habit:** medium size; multi-stemmed; suckering; shiny, green foliage

**Drought Resistance:** fair

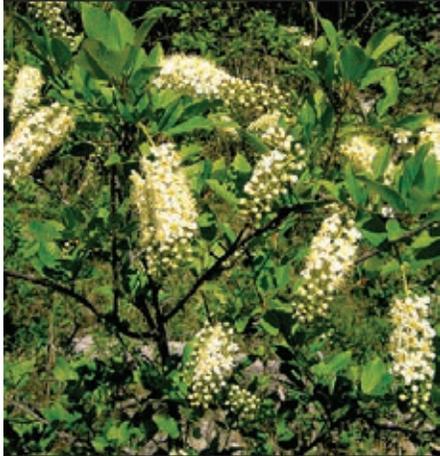
**Wildlife Value:** excellent food for birds, pollinator friendly

**Flowers:** white followed by persistent black fruit

**Pests:** tent caterpillar

**Soils:** adaptable to varying soil conditions

**Other:** tolerates low, wet areas; introduced species



### Chokecherry, Common

(*Prunus virginiana*)

**20-Year Height:** 10 feet

**Growth Rate:** moderate

**Growth Habit:** oval to rounded, suckering

**Drought Resistance:** good

**Wildlife Value:** excellent for food and cover

**Flowers:** creamy white

**Pests:** tent caterpillar

**Disease:** "western" x-disease, black knot, stem decay

**Other:** purple leaf varieties available, adapted to wide variety of soils, fruits for jellies, orange fall foliage, foliage can be poisonous to livestock, native species



### Cinquefoil, Shrubby

(*Dasiphora fruticosa*)

**20-Year Height:** 3 feet

**Growth Rate:** moderate

**Growth Habit:** hardy and flowers throughout most of the season

**Drought Resistance:** good

**Wildlife Value:** good nesting cover, pollinator friendly

**Flowers:** yellow or creamy-white

**Soils:** adaptable to soils with high pH

**Other:** popular for its floral display, many cultivated varieties available, native species



### Cotoneaster, Centennial

(*Cotoneaster integerrimus*)

**20-Year Height:** 10 feet

**Growth Rate:** moderate

**Growth Habit:** spreading, open and upright, arching branches

**Drought Resistance:** good

**Wildlife Value:** fruit attracts birds

**Flowers:** pinkish-white

**Pests:** pear slug, deer will browse

**Disease:** fireblight

**Other:** well-adapted to dry, moderately alkaline soils; showy red berries; red fall foliage; should not be planted near crab apples; introduced species



## Deciduous Shrubs



### Currant, Golden

(*Ribes aureum*)

**20-Year Height:** 6 feet

**Growth Rate:** moderate

**Growth Habit:** upright, spreading

**Drought Resistance:** good

**Wildlife Value:** roosting, loafing, nesting and food for birds

**Flowers:** fragrant, golden-yellow

**Pests:** currant worm

**Disease:** anthracnose, leafspots, white pine blister rust host

**Other:** berries used fresh for jelly, tolerant of slightly saline soils, native species



### Dogwood, Redosier

(*Cornus sericea*)

**20-Year Height:** 7 feet

**Growth Rate:** rapid

**Growth Habit:** loose and rounded, many stems

**Drought Resistance:** poor

**Wildlife Value:** dense cover and food source

**Flowers:** creamy

**Disease:** twig blight

**Other:** dark, blood-red bark provides winter color; best adapted to subirrigated or seasonally wet areas; native species



### Honeysuckle, Blueleaf

(*Lonicera korolkowii*)

**20-Year Height:** 8 feet

**Growth Rate:** moderate

**Growth Habit:** spreading

**Drought Resistance:** good

**Wildlife Value:** nesting and food

**Flowers:** yellow-pink

**Other:** plant only Russian-aphid-resistant cultivars, tolerant of slightly saline soils, introduced species



### Lilac, Common

(*Syringa vulgaris*)

**20-Year Height:** 8 feet

**Growth Rate:** moderate

**Growth Habit:** upright, many-stemmed, suckering

**Drought Resistance:** excellent

**Wildlife Value:** little value for fruit or browse, good songbird nesting, highly preferred by leafcutter bees

**Flowers:** white to purple, fragrant and showy

**Pests:** lilac borer

**Disease:** powdery mildew

**Other:** introduced species



## Deciduous Shrubs



### Mahogany, Curl-Leaf Mountain

(*Cercocarpus ledifolius*)

**20-Year Height:** 9 feet

**Growth Rate:** moderate

**Growth Habit:** shiny, deep green, narrow foliage with grey bark

**Drought Resistance:** good

**Wildlife Value:** good food source and cover

**Soils:** very tolerant of limy and shallow soils

**Other:** very sun and heat tolerant, can grow on limestone rock outcrop, native species



### Ninebark

(*Physocarpus malvaceus*)

**20-Year Height:** 8 feet

**Growth Rate:** moderate

**Growth Habit:** coarse

**Drought Resistance:** fair

**Wildlife Value:** good cover and food, pollinator friendly

**Flowers:** white

**Soils:** handles a variety of soil types

**Other:** shreddy-looking bark, purple leaf varieties available, fruits for jellies, native species



### Plum, American

(*Prunus americana*)

**20-Year Height:** 10 feet

**Growth Rate:** moderate

**Growth Habit:** round-headed crown, suckers freely

**Drought Resistance:** good

**Wildlife Value:** important for nesting, loafing, browse and food

**Flowers:** white flowers before leaf out

**Pests:** prairie tent caterpillar

**Disease:** stem decay, branch cankers, black knot, plum pockets

**Other:** thorny, winter-hardy, thicket-forming, edible fruit, native



### Rose, Woods'

(*Rosa woodsii*)

**20-Year Height:** 6 feet

**Growth Rate:** moderate

**Growth Habit:** stems upright, semi- weeping

**Drought Resistance:** fair

**Wildlife Value:** excellent food source, nesting and cover

**Flowers:** showy, pink

**Other:** fruit referred to as a rose hip is a source of Vitamin C, native species



## Deciduous Shrubs



### Sagebrush, Silver

(*Artemisia cana*)

**20-Year Height:** 4 feet

**Growth Rate:** moderate

**Growth Habit:** low growing and sprouts

**Drought Resistance:** excellent

**Wildlife Value:** good nesting and browse

**Flowers:** small, yellow

**Other:** good tolerance of alkaline soils, native species



### Sandcherry, Western

(*Prunus pumila* var. *besseyi*)

**20-Year Height:** 4 feet

**Growth Rate:** moderate

**Growth Habit:** open, spreading

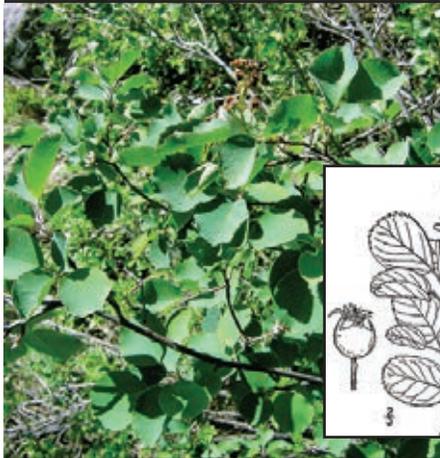
**Drought Resistance:** good

**Wildlife Value:** good loafing, food source and browse

**Flowers:** white

**Disease:** leaf curl, black knot, fireblight

**Other:** relatively short-lived, fruit for pies and jellies, native species in extreme eastern Montana



### Serviceberry, Saskatoon

(*Amelanchier alnifolia*)

**20-Year Height:** 10 feet

**Growth Rate:** moderate

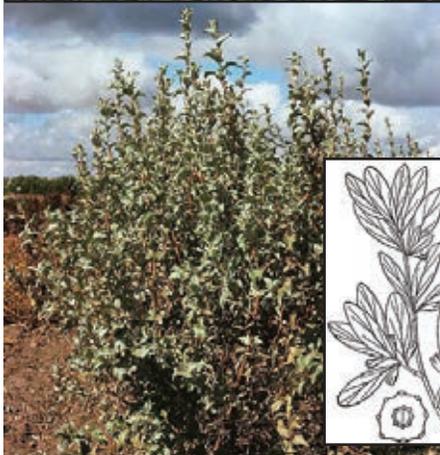
**Growth Habit:** upright, can grow into a small tree

**Drought Resistance:** good

**Wildlife Value:** high quality cover and food, excellent browse

**Flowers:** white

**Other:** nutritious fruit used fresh, frozen or processed; red-orange fall foliage; native species



### Silverberry

(*Elaeagnus commutata*)

**20-Year Height:** 6 feet

**Growth Rate:** moderate

**Growth Habit:** narrow, upright, suckers profusely

**Drought Resistance:** good

**Wildlife Value:** dense thickets and food source

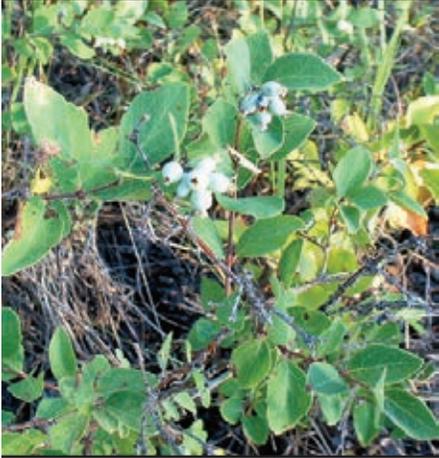
**Pests:** subject to damage by rabbits

**Disease:** branch cankers

**Other:** silver-white leaves, excellent erosion control, tolerant of slightly saline soils, native species



## Deciduous Shrubs



### Snowberry, Common and Western

(*Symphoricarpos* spp.)

**20-Year Height:** 4 feet

**Growth Rate:** moderate

**Growth Habit:** oval to round, suckering

**Drought Resistance:** good

**Wildlife Value:** nesting and thermal cover

**Flowers:** light pink

**Other:** very hardy, excellent for erosion control, fruit bright white and can be poisonous, tolerant of slightly saline soils, native species



### Sumac, Skunkbush

(*Rhus trilobata*)

**20-Year Height:** 8 feet

**Growth Rate:** slow

**Growth Habit:** ascending, new branchlets hairy

**Drought Resistance:** excellent

**Wildlife Value:** fall and winter food for birds, deer browse

**Flowers:** light yellow

**Other:** scented leaves, yellow-orange to red fall foliage; prefers well-drained soils, tolerant of slightly saline soils, native species



### Willow, Narrowleaf

(*Salix exigua*)

**20-Year Height:** 10 feet

**Growth Rate:** rapid

**Growth Habit:** upright, vigorous suckering

**Drought Resistance:** poor

**Wildlife Value:** excellent for riparian habitat improvement

**Pests:** leaf beetles

**Other:** aggressive suckering provides excellent streambank stabilization, also called coyote willow, native species



## Small Deciduous Trees



**Buckeye, Ohio**  
(*Aesculus glabra*)

**20-Year Height:** 20 feet  
**Growth Rate:** moderate  
**Growth Habit:** small tree with oval to rounded crown; somewhat structurally weak under heavy snow loads  
**Drought Resistance:** poor  
**Wildlife Value:** nuts eaten by squirrels  
**Flowers:** terminal, candle-like, greenish-yellow flowers  
**Pests:** susceptible to leaf scorch  
**Other:** prefers full sun; yellow-orange to red fall foliage; dark brown, glossy, inedible fruit with light brown ovule or buckeye; introduced species



**Crab apple, Siberian**  
(*Malus baccata*)

**20-Year Height:** 15 feet  
**Growth Rate:** moderate  
**Growth Habit:** round to spreading  
**Drought Resistance:** good  
**Wildlife Value:** cover, fruit and browse  
**Flowers:** white  
**Pests:** cankerworm, apple maggot  
**Disease:** fireblight, cedar-apple rust, apple scab, canker  
**Other:** needs well-drained, moist soil and protection from sun; introduced species



**Hawthorn, Arnold**  
(*Crataegus X anomala [intricata X mollis]*)

**20-Year Height:** 16 feet  
**Growth Rate:** moderate  
**Growth Habit:** upright to horizontal, symmetrical  
**Drought Resistance:** good  
**Wildlife Value:** nesting, food and browse  
**Flowers:** white with a disagreeable odor  
**Other:** tolerates urban pollution, has large thorns, bright orange-red fruit, introduced species



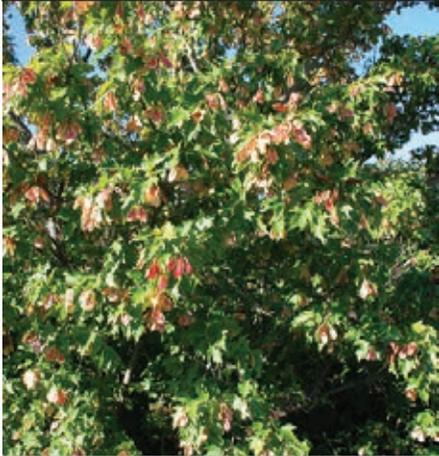
**Hawthorn, Black**  
(*Crataegus douglasii*)

**20-Year Height:** 16 feet  
**Growth Rate:** moderate  
**Growth Habit:** small tree with thorny branches, produces black berries  
**Drought Resistance:** fair  
**Wildlife Value:** nesting and food for birds, excellent cover for mammals  
**Disease:** susceptible to cedar-apple and other rusts, causing some disfiguration of the leaves, but not limiting its usefulness  
**Other:** native species



## Small Deciduous Trees

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### Maple, Amur

(*Acer ginnala*)

**20-Year Height:** 15 feet

**Growth Rate:** moderate

**Growth Habit:** multi-stemmed

**Drought Resistance:** good

**Wildlife Value:** browse, fair cover

**Flowers:** light yellow

**Other:** adaptable to a variety of soils, except alkaline; sensitive to phenoxy herbicides; outstanding bright reddish fall colors; introduced species

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### Pear, Chinese

(*Pyrus ussuriensis*)

**20-Year Height:** 20 feet

**Growth Rate:** moderate

**Growth Habit:** white flowers, semi-glossy foliage and dense rounded crown, often branching low to the ground

**Drought Resistance:** fair

**Wildlife Value:** pollinator friendly, good nesting and cover

**Flowers:** pink fading to white, does not fully bloom until 10 years old

**Pests:** rabbit girdling and deer browsing

**Soils:** does not tolerate saline soils

**Other:** small, hard fruit that may be used for jams and jellies; introduced species



## Medium/Tall Deciduous Trees



**Ash, Green**  
(*Fraxinus pennsylvanica*)

**20-Year Height:** 18 feet

**Growth Rate:** moderate

**Growth Habit:** usually a single trunk, oval to elliptical crown

**Drought Resistance:** good

**Wildlife Value:** nesting site

**Pests:** cankerworms, ash plant bugs, ash borers (emerald ash borer not in Montana as of the date of publication)

**Disease:** stem decay, branch and twig cankers, anthracnose, leaf rust, ash yellows

**Other:** can withstand flooding for short periods of time, yellow fall foliage, native species



**Aspen, Quaking**  
(*Populus tremuloides*)

**20-Year Height:** 25 feet

**Growth Rate:** rapid

**Growth Habit:** upright with sparse crown

**Drought Resistance:** fair

**Wildlife Value:** browse, nesting and thermal cover; excellent for cavity nesting birds

**Disease:** leaf spot, wetwood, stem canker and decay

**Other:** numerous root sprouts, preferred browse, beautiful yellow fall foliage with some clones turning orange or red, native species



**Birch, Paper**  
(*Betula papyrifera*)

**20-Year Height:** 25 feet

**Growth Rate:** rapid

**Growth Habit:** narrow, thin canopy allows other plants to grow below, shallow-rooted, usually a single trunk, European species has drooping branches

**Drought Resistance:** poor

**Wildlife Value:** good for sapsuckers; bird nesting; deer, elk, moose browse

**Pests:** bronze birch borer

**Disease:** various fungi or bacteria can enter through wounds

**Other:** prefers moist, well-drained soils, blazing yellow fall foliage, 10+ year-old trees have white bark, prefers long winters and mild summers, prune in late summer or fall to avoid heavy sap flow, branches break easily, native



**Boxelder**  
(*Acer negundo*)

**20-Year Height:** 18 feet

**Growth Rate:** moderate

**Growth Habit:** trunk commonly divides into several wide-spreading branches forming an irregular crown

**Drought Resistance:** good

**Wildlife Value:** nesting site

**Disease:** stem decay

**Other:** sap used to make syrup, highly sensitive to phenoxy herbicides, boxelder bugs associated with this tree are a nuisance to people, native species



## Medium/Tall Deciduous Trees



### Cottonwood, Black

(*Populus trichocarpa*)

**20-Year Height:** 45 feet

**Growth Rate:** rapid

**Growth Habit:** largest of our cottonwoods, with heavy limbs

**Drought Resistance:** poor

**Wildlife Value:** excellent perch and denning tree

**Soils:** requires moist site with seasonal water table

**Disease:** cankers

**Other:** native along streams west of the Continental Divide, and east of Divide along mountain and foothill streams; can be messy during seed dispersion



### Cottonwood, Narrowleaf

(*Populus angustifolia*)

**20-Year Height:** 45 feet

**Growth Rate:** rapid

**Growth Habit:** medium to large tree with heavy limbs and narrow leaves

**Drought Resistance:** poor

**Wildlife Value:** excellent perch, den and nest tree

**Soils:** requires a moist site with seasonal water table

**Disease:** cankers

**Other:** native along mountainous streams east of the Continental Divide, can be messy during seed dispersion



### Cottonwood, Plains

(*Populus deltoides*)

**20-Year Height:** 40 feet

**Growth Rate:** rapid

**Growth Habit:** large tree, upright, branches spread to form an open crown

**Drought Resistance:** fair

**Wildlife Value:** browse

**Pests:** aphids, gall mite, leaf beetles

**Soils:** requires a moist site

**Disease:** leaf rust, leaf spot and canker, wetwood, stem decay

**Other:** tolerant of slightly saline soils, native species with both male and female flowers borne on separate trees, can be messy during seed dispersion, Robusta cottonwood (*Populus robusta*) is a cottonless hybrid male tree variety



### Elm, Siberian

(*Ulmus pumila*)

**20-Year Height:** 25 feet

**Growth Rate:** rapid

**Growth Habit:** open with several ascending branches, brittle wood is subject to breakage

**Drought Resistance:** good

**Wildlife Value:** nesting sites

**Pests:** cankerworm

**Disease:** canker, wetwood

**Other:** highly sensitive to phenoxy herbicides, introduced species



## Medium/Tall Deciduous Trees



### Hackberry, Common

(*Celtis occidentalis*)

**20-Year Height:** 15 feet

**Growth Rate:** moderate

**Growth Habit:** single trunk, broadening crown

**Drought Resistance:** good

**Wildlife Value:** excellent, dark purple fruit used by birds and mammals

**Pests:** commonly damaged by browsing rodents, rabbits and deer

**Other:** good replacement for the elm because of its similar form and adaptability, somewhat tolerant to alkaline soils, introduced species, native to North Dakota



### Honeylocust

(*Gleditsia triacanthos*)

**20-Year Height:** 20 feet

**Growth Rate:** moderate

**Growth Habit:** develops a deep tap root, suckers

**Drought Resistance:** fair

**Wildlife Value:** food and nesting sites for birds

**Disease:** relatively disease free but can develop a canker

**Other:** thorns present, thornless varieties, fine compound leaves, legume seed pods larger than in black locust and twist when drying, fixes nitrogen, invasive in some states, introduced



### Linden, American

(*Tilia americana*)

**20-Year Height:** 25 feet

**Growth Rate:** moderate

**Growth Habit:** large stature, aromatic flowers, oval canopy, provides shade

**Drought Resistance:** poor

**Wildlife Value:** good den tree, pea-sized fruit is good for birds

**Soils:** deep, fertile, well-drained loam and clay soils

**Other:** can tolerate flooding, very pollinator-friendly and the upright branches tolerate snow loads, 'basswood' is another common name, leaves and flowers edible, introduced species, bright yellow fall foliage



### Locust, Black

(*Robinia pseudoacacia*)

**20-Year Height:** 25 feet

**Growth Rate:** rapid

**Growth Habit:** tall, single-stemmed tree; form is upright oval that becomes irregular with age, suckers

**Drought Resistance:** good

**Wildlife Value:** good pollinator tree, seed pods provide food for birds

**Pests:** black locust borer and leaf miner

**Disease:** heartwood decay

**Other:** used in reclamation plantings; legume family, fixes nitrogen; tolerates dry, infertile soils; two thorns present at the base of leaf stalks; invasive in some states, introduced species



## Medium/Tall Deciduous Trees



**Oak, Bur**  
(*Quercus macrocarpa*)

**20-Year Height:** 18 feet  
**Growth Rate:** moderate, slow initially until roots established  
**Growth Habit:** stout branches, informal spreading to rounded  
**Drought Resistance:** good  
**Wildlife Value:** excellent food and cover  
**Pests:** commonly damaged by rodents, rabbits and deer  
**Disease:** leaf and twig anthracnose, leaf curl, stem decay  
**Other:** long-lived tree with deep taproot, native species to the southeast corner of Montana



**Poplar, White**  
(*Populus alba*)

**20-Year Height:** 25 feet  
**Growth Rate:** rapid  
**Growth Habit:** upright with strong, spreading branches  
**Drought Resistance:** good  
**Pests:** poplar borer, carpenter worm  
**Disease:** stem and branch cankers  
**Wildlife Value:** browse, fair nesting  
**Other:** numerous root sprouts, can ruin foundations and sewer pipes, confused with silver maple because of maple-shaped leaves, silver poplar is another common name, can be messy during seed dispersion, introduced species



**Walnut, Black**  
(*Juglans nigra*)

**20-Year Height:** 16 feet  
**Growth Rate:** moderate  
**Growth Habit:** medium-size tree with large, rounded and somewhat open crown  
**Drought Resistance:** fair  
**Wildlife Value:** good food for mammals, good nesting for birds  
**Soils:** prefers moist well-drained soils, sensitive to soil conditions  
**Other:** heartwood is used for veneer and furniture, select hardy seed sources, produces edible nuts, introduced species



**Willow, Golden**  
(*Salix alba*)

**20-Year Height:** 25 feet  
**Growth Rate:** rapid  
**Growth Habit:** large, spreading to round crown; includes 'weeping willow' varieties with drooping branches and varieties with more ascending branches  
**Drought Resistance:** fair  
**Wildlife Value:** provides cover, browse  
**Pests:** aphids  
**Disease:** stem rot, watermark disease, anthracnose  
**Other:** branches shed easily, 'golden willow' name refers to the yellow-gold colored young stems, also called 'white willow' alluding to the white color of the leaf underside, can be invasive along waterways, introduced species



# Conifers



## Fir, Douglas (Rocky Mountain) (*Pseudotsuga menziesii* var. *glauca*)

**20-Year Height:** 15 feet

**Growth Rate:** moderate

**Growth Habit:** open, pyramidal

**Drought Resistance:** fair

**Wildlife Value:** good nesting sites for birds

**Pests:** Douglas fir beetle, deer browse and rubbing, spruce budworm; dwarf mistletoe west of the divide; Cooley spruce gall adelgid

**Disease:** heartwood decay, Rhabdocline needle cast

**Other:** tolerates alkaline soils, not a true fir, has pointed buds, native species



## Juniper, Rocky Mountain (*Juniperus scopulorum*)

**20-Year Height:** 12 feet

**Growth Rate:** moderate

**Growth Habit:** dense, pyramidal, upward-reaching branches

**Drought Resistance:** excellent

**Wildlife Value:** excellent food, nesting and cover

**Pests:** spider mites

**Disease:** cedar-apple rust, tip blight

**Other:** should not be planted near crab apples, serviceberries, currants or hawthorns; native species



## Larch, Siberian (*Larix sibirica*)

**20-Year Height:** 16 feet

**Growth Rate:** moderate

**Growth Habit:** large, pyramidal, deciduous conifer with spreading, horizontal branches

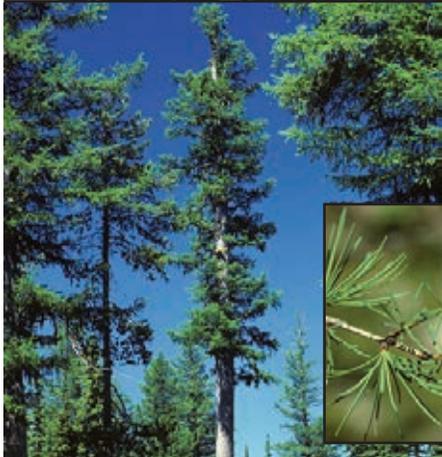
**Drought Resistance:** good

**Wildlife Value:** good nesting for birds

**Pests:** cankerworm

**Soils:** adapted to acidic soils (<7 pH)

**Other:** cold-hardy tree, needles turn attractive yellow and are shed each year, introduced species



## Larch, Western (*Larix occidentalis*)

**20-Year Height:** 17 feet

**Growth Rate:** moderate

**Growth Habit:** large, pyramidal, deciduous; spreading, horizontal branches

**Drought Resistance:** fair

**Wildlife Value:** good nesting for birds

**Pests:** larch casebearer and larch sawfly

**Disease:** root disease, larch dwarf mistletoe, needle blight, needle cast

**Soils:** adapted to acidic soils (<7 pH)

**Other:** valuable commercial tree, needles turn yellow and are shed each fall, tamarack is a common name used by locals, native west of the Continental Divide



## Conifers



### Pine, Austrian

(*Pinus nigra*)

**20-Year Height:** 17 feet

**Growth Rate:** moderate

**Growth Habit:** pyramidal shape, mid-length needles, dense

**Drought Resistance:** good

**Wildlife Value:** good nesting for birds, provides cover for mammals

**Disease:** susceptible to Dothistroma needle blight and Lophodermium needle cast

**Soils:** very adaptable to many soil types from heavy clay to sandy soils

**Other:** two needles per bundle, can handle smog, introduced species



### Pine, Limber

(*Pinus flexilis*)

**20-Year Height:** 10 feet

**Growth Rate:** slow

**Growth Habit:** open crown

**Drought Resistance:** good

**Wildlife Value:** good nesting for birds

**Pests:** white pine blister rust

**Other:** five needles per bundle, pitchy cones, large seeds preferred by birds and people, native species



### Pine, Lodgepole

(*Pinus contorta*)

**20-Year Height:** 17 feet

**Growth Rate:** moderate

**Growth Habit:** lightly branched, upright

**Drought Resistance:** fair

**Wildlife Value:** nesting and thermal cover

**Pests:** pine beetle

**Disease:** dwarf mistletoe, needle cast, Comandra blister rust, western gall rust

**Other:** two needles per bundle, grows best on moist loams, native species



### Pine, Ponderosa

(*Pinus ponderosa* var. *ponderosa* & var. *scopulorum*)

**20-Year Height:** 17 feet

**Growth Rate:** moderate

**Growth Habit:** pyramidal when young

**Drought Resistance:** good, most drought tolerant pine

**Wildlife Value:** Food and nesting for birds

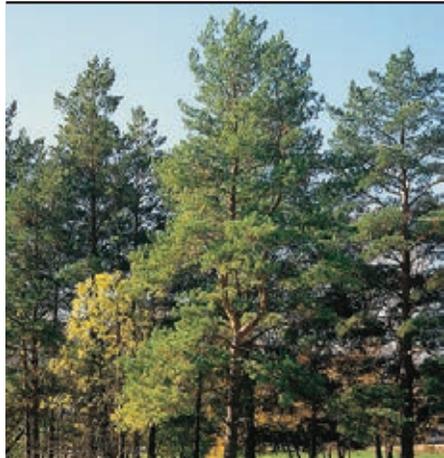
**Pests:** tip moth, sawfly, pine needle scale, aphids, pine beetle

**Disease:** needle cast, western gall rust

**Other:** usually three needles per bundle (sometimes two with var. *scopulorum*, which occurs east of the Continental Divide), two varieties in Montana (west of Continental Divide is var. *ponderosa*), causes abortion in cows, mature bark yellow with vanilla smell, tolerates alkaline soils, native species



## Conifers



### Pine, Scotch

(*Pinus sylvestris*)

**20-Year Height:** 17 feet

**Growth Rate:** moderate to rapid

**Growth Habit:** rounded and open

**Drought Resistance:** good

**Wildlife Value:** nesting and winter cover

**Pests:** tip moth, sawfly, pine needle scale, aphids

**Disease:** needle cast, gall rust, pine beetle

**Soils:** prefers moist, well-drained soils

**Other:** 2 needles per bundle, Scots pine is another common name, mature bark orange on upper trunk and branches, introduced species



### Spruce, Colorado Blue

(*Picea pungens*)

**20-Year Height:** 15 feet

**Growth Rate:** moderate

**Growth Habit:** branching is broad and dense, branches extending to ground, often with light bluish needles

**Drought Resistance:** good

**Wildlife Value:** nesting site

**Pests:** spider mites, spruce needleminer, pine needle scale, yellow-headed spruce sawfly, aphids, white terminal weevil

**Disease:** needle cast, canker, needle blight

**Other:** performs best on moist, well-drained loams, introduced



### Spruce, Engelmann

(*Picea engelmannii*)

**20-Year Height:** 14 feet

**Growth Rate:** slow

**Growth Habit:** dense, pyramidal form

**Drought Resistance:** fair

**Wildlife Value:** excellent nesting for birds

**Pests:** spruce budworm, Cooley spruce gall adelgid, spruce needleminer

**Soils:** can tolerate wet sites

**Other:** can tolerate cold frost pockets, native species



### Spruce, Western white (Black Hills)

(*Picea X albertiana*)

**20-Year Height:** 12 feet

**Growth Rate:** slow

**Growth Habit:** broad pyramidal to conical crown

**Drought Resistance:** good

**Wildlife Value:** nesting, browse, good cover

**Pests:** spider mite, spruce needleminer, pine needle scale, yellow-headed spruce sawfly, aphids

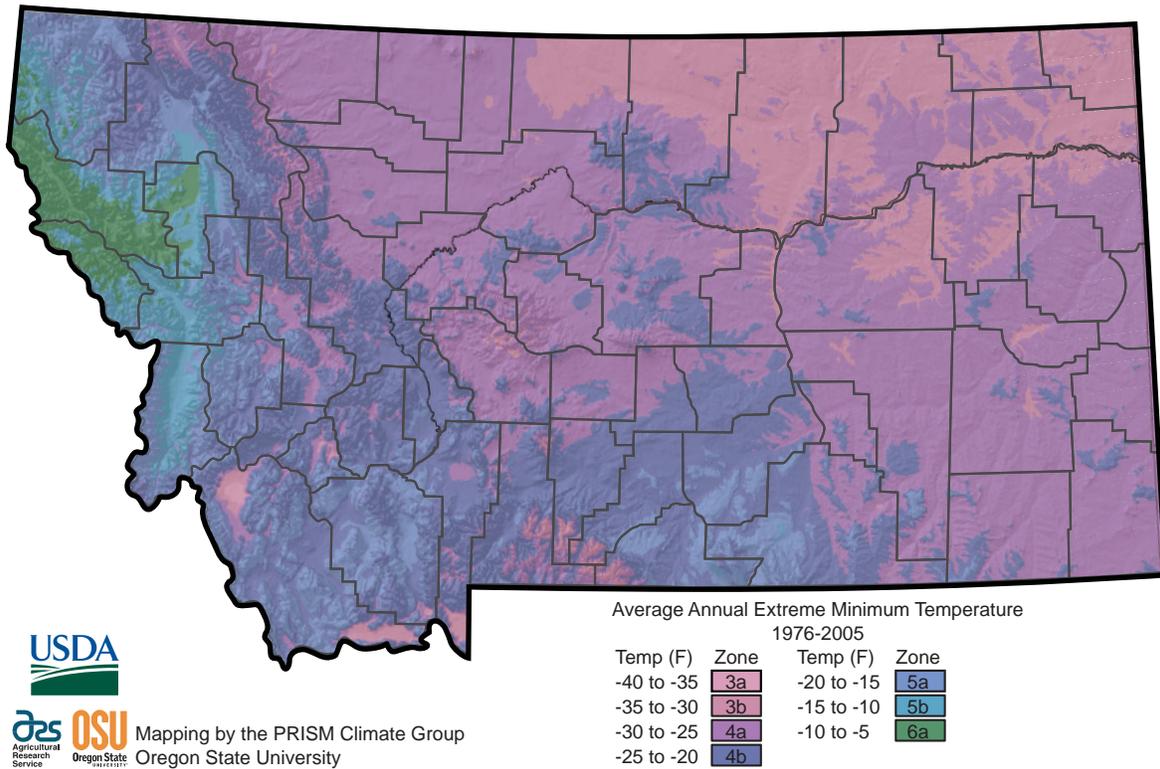
**Disease:** needle blight

**Other:** grows best on moist loams, native species, cross between white and Engelmann spruce



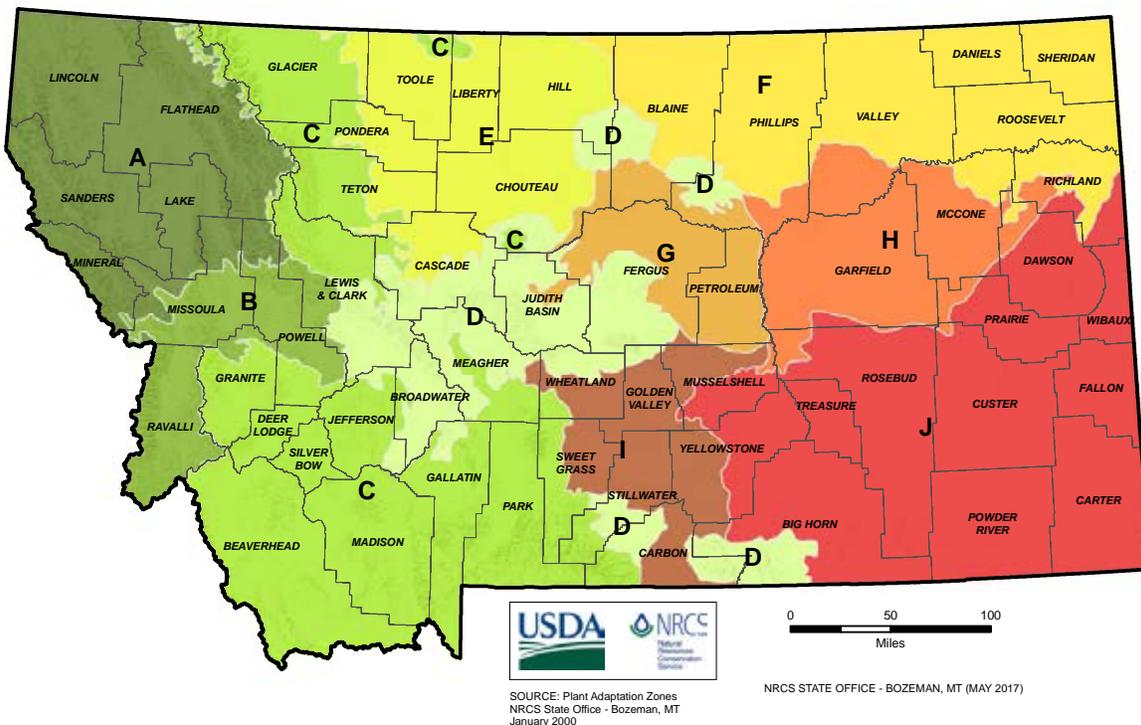
## USDA Plant Hardiness Zones

The USDA Plant Hardiness Zones were developed nationwide and are based on the average annual minimum temperatures.



## NRCS Plant Adaptation Zones

The Plant Adaptation Zones were developed for Montana with each zone integrating the length of growing season, minimum winter temperature, and chinook frequency. Species are recommended for planting only in the listed zones.



# SPECIES CHARACTERISTICS

|                               | HARDINESS ZONE | PLANT ADAPTATION ZONE(S) <sup>^</sup> | 20-YEAR HEIGHT (FT.) | MATURE HEIGHT (FT.) | CROWN WIDTH (FT.) | GROWTH RATE | DROUGHT TOLERANCE MIN. PREC. (IN.) | SALINE/ALKALI SOILS TOLERANCE | WILDLIFE RATING |      |         |        |
|-------------------------------|----------------|---------------------------------------|----------------------|---------------------|-------------------|-------------|------------------------------------|-------------------------------|-----------------|------|---------|--------|
|                               |                |                                       |                      |                     |                   |             |                                    |                               | BIRDS           |      | MAMMALS |        |
|                               |                |                                       |                      |                     |                   |             |                                    |                               | NESTING         | FOOD | COVER   | BROWSE |
| <b>DECIDUOUS SHRUBS</b>       |                |                                       |                      |                     |                   |             |                                    |                               |                 |      |         |        |
| Almond, Russian               | 2              | A, B, D-J                             | 4                    | 3-5                 | 6                 | M           | G-12                               | F                             | E               | E*   | F       | F      |
| Buffaloberry, Silver          | 2              | ALL                                   | 10                   | 6-12                | 7                 | M           | E-8                                | E                             | E               | E*   | E       | E      |
| Caragana                      | 2              | ALL                                   | 12                   | 6-14                | 12                | R           | E-8                                | G                             | E               | F*   | F       | P      |
| Cherry, Nanking               | 2              | A, B, D-J                             | 7                    | 6-10                | 8                 | M           | G-10                               | F                             | E               | E*   | F       | E      |
| Chokeberry, Black             | 3              | D-J                                   | 6                    | 3-8                 | 5                 | M           | F-14                               | F                             | G               | E*   | G       | G      |
| Chokecherry, Common           | 2              | ALL                                   | 10                   | 8-15                | 9                 | M           | G-10                               | F                             | E               | E*   | E       | F      |
| Cotoneaster, Centennial       | 3              | A, B, D-J                             | 10                   | 6-10                | 4                 | M           | G-10                               | F                             | E               | E*   | F       | P      |
| Currant, Golden               | 2              | ALL                                   | 6                    | 4-8                 | 5                 | M           | G-11                               | F                             | G               | G*   | F       | G      |
| Dogwood, Redosier             | 2              | ALL                                   | 7                    | 5-10                | 6                 | R           | P-18                               | P                             | E               | F*   | E       | G      |
| Honeysuckle, Blueleaf         | 2              | A, B, D-J                             | 8                    | 5-10                | 8                 | M           | G-12                               | F                             | E               | E*   | G       | P      |
| Lilac, Common                 | 2              | ALL                                   | 6                    | 8-10                | 7                 | M           | E-9                                | F                             | E               | P*   | E       | P      |
| Mahogany, Curl-Leaf Mountain  | 4              | B, C, D                               | 9                    | 6-15                | 7                 | M           | G-12                               | F                             | G               | G    | E       | E      |
| Ninebark                      | 2              | A-D                                   | 8                    | 3-8                 | 6                 | M           | F-14                               | F                             | G               | G*   | G       | F      |
| Plum, American                | 3              | ALL                                   | 10                   | 6-15                | 9                 | M           | G-10                               | F                             | E               | G*   | G       | E      |
| Cinquefoil, Shrubby           | 2              | ALL                                   | 3                    | 2-4                 | 4                 | M           | G-11                               | G                             | G               | F*   | G       | F      |
| Rose, Woods'                  | 2              | ALL                                   | 6                    | 3-8                 | 6                 | M           | F-14                               | P                             | E               | E*   | E       | E      |
| Sagebrush, Silver             | 2              | ALL                                   | 4                    | 3-6                 | 5                 | M           | G-10                               | G                             | G               | F    | P       | G      |
| Sandcherry, Western           | 3              | A, B, D-J                             | 4                    | 3-6                 | 6                 | M           | G-10                               | F                             | G               | E*   | F       | F      |
| Serviceberry, Saskatoon       | 2              | A, B, D-J                             | 10                   | 8-15                | 8                 | M           | G-12                               | F                             | G               | E*   | G       | G      |
| Silverberry                   | 2              | ALL                                   | 6                    | 6-12                | 6                 | M           | G-12                               | F                             | G               | G    | F       | F      |
| Snowberry, Common and Western | 3              | ALL                                   | 3                    | 4-5                 | 5                 | M           | G-12                               | F                             | F               | G*   | P       | F      |
| Sumac, Skunkbush              | 3              | ALL                                   | 8                    | 6-10                | 5                 | S           | E-8                                | F                             | E               | F*   | E       | G      |
| Willow, Narrowleaf            | 3              | ALL                                   | 10                   | 10                  | 5                 | R           | P-15                               | F                             | G               | F*   | G       | G      |
| <b>SMALL DECIDUOUS TREES</b>  |                |                                       |                      |                     |                   |             |                                    |                               |                 |      |         |        |
| Buckeye, Ohio                 | 3              | F, H, J                               | 20                   | 20-40               | 15                | M           | F-15                               | F                             | F               | P*   | F       | F      |
| Crab apple, Siberian          | 2              | ALL                                   | 15                   | 15-25               | 14                | M           | G-12                               | F                             | F               | G*   | F       | F      |
| Hawthorn, Arnold              | 3              | A, B, J                               | 16                   | 15-20               | 12                | M           | G-12                               | F                             | E               | G*   | G       | F      |
| Hawthorn, Black               | 4              | A-E                                   | 16                   | 15-20               | 12                | M           | F-15                               | F                             | E               | E*   | E       | F      |
| Maple, Amur                   | 2              | A, B, D-J                             | 15                   | 15-20               | 10                | M           | G-12                               | P                             | F               | P    | F       | F      |
| Pear, Chinese                 | 3              | ALL                                   | 20                   | 25-35               | 18                | M           | F-14                               | P                             | G               | G*   | G       | G      |

R=Rapid M=Moderate S=Slow E=Excellent G=Good F=Fair P=Poor \*=Pollinator Friendly

<sup>^</sup>Generalization of complex site interactions. Consult local experts.



## SPECIES CHARACTERISTICS

|                                    | HARDINESS ZONE | PLANT ADAPTATION ZONE(S) <sup>^</sup> | 20-YEAR HEIGHT (FT.) | MATURE HEIGHT (FT.) | CROWN WIDTH (FT.) | GROWTH RATE | DROUGHT TOLERANCE MIN. PREC. (IN.) | SALINE/ALKALI SOILS TOLERANCE | WILDLIFE RATING |      |         |        |
|------------------------------------|----------------|---------------------------------------|----------------------|---------------------|-------------------|-------------|------------------------------------|-------------------------------|-----------------|------|---------|--------|
|                                    |                |                                       |                      |                     |                   |             |                                    |                               | BIRDS           |      | MAMMALS |        |
|                                    |                |                                       |                      |                     |                   |             |                                    |                               | NESTING         | FOOD | COVER   | BROWSE |
| <b>MEDIUM/TALL DECIDUOUS TREES</b> |                |                                       |                      |                     |                   |             |                                    |                               |                 |      |         |        |
| Ash, Green                         | 2              | ALL                                   | 8                    | 40-60               | 11                | M           | G-10                               | F                             | G               | F    | F       | G      |
| Aspen, Quaking                     | 1              | ALL                                   | 25                   | 25-80               | 8                 | R           | P-15                               | P                             | G               | P    | G       | F      |
| Birch, Paper                       | 2              | A, B                                  | 25                   | 35-60               | 8                 | R           | P-16                               | P                             | G               | F    | F       | G      |
| Boxelder                           | 2              | ALL                                   | 18                   | 30-50               | 12                | M           | G-11                               | F                             | G               | G    | F       | G      |
| Cottonwood, Black                  | 2              | A-E, G, I, J                          | 45                   | 80-120              | 25                | R           | P-16                               | F                             | F               | P    | P       | F      |
| Cottonwood, Narrowleaf             | 3              | A-E, G, I, J                          | 45                   | 40-70               | 25                | R           | P-16                               | F                             | F               | P    | P       | F      |
| Cottonwood, Plains                 | 3              | ALL                                   | 40                   | 50-90               | 25                | R           | 0-16                               | F                             | F               | P    | P       | F      |
| Elm, Siberian                      | 3              | ALL                                   | 25                   | 35-65               | 19                | R           | G-12                               | G                             | F               | F    | P       | P      |
| Hackberry, Common                  | 2              | A, B, D-J                             | 15                   | 30-60               | 10                | M           | G-12                               | F                             | F               | F    | F       | F      |
| Honeylocust                        | 4              | A, B, J                               | 20                   | 40-70               | 11                | M           | G-12                               | F                             | F               | F    | P       | P      |
| Linden, American                   | 2              | A-D, I                                | 25                   | 40-75               | 20                | M           | P-16                               | F                             | F               | G*   | F       | F      |
| Locust, Black                      | 3              | A-C, I, J                             | 25                   | 40-70               | 15                | R           | G-12                               | F                             | G               | G*   | F       | F      |
| Oak, Bur                           | 2              | A-D, G-J                              | 18                   | 30-55               | 15                | M           | G-10                               | F                             | F               | G    | F       | G      |
| Poplar, White                      | 3              | ALL                                   | 25                   | 40-60               | 19                | R           | G-12                               | F                             | F               | P    | P       | F      |
| Walnut, Black                      | 4              | A, B, F, H, J                         | 16                   | 50-75               | 14                | M           | F-14                               | F                             | G               | G    | F       | F      |
| Willow, Golden                     | 2              | ALL                                   | 25                   | 30-50               | 13                | R           | F-13                               | F                             | F               | F*   | F       | F      |
| <b>CONIFERS</b>                    |                |                                       |                      |                     |                   |             |                                    |                               |                 |      |         |        |
| Fir, Douglas                       | 3              | ALL                                   | 15                   | 50-130              | 10                | M           | F-13                               | P                             | G               | F    | P       | P      |
| Juniper, Rocky Mountain            | 3              | ALL                                   | 12                   | 15-30               | 9                 | M           | E-8                                | F                             | G               | G    | G       | E      |
| Larch, Siberian                    | 2              | ALL                                   | 16                   | 40-50               | 9                 | M           | G-12                               | F                             | G               | F    | F       | F      |
| Larch, Western                     | 4              | A, B                                  | 17                   | 100-150             | 12                | M           | F-15                               | P                             | G               | F    | F       | F      |
| Pine, Austrian                     | 4              | ALL                                   | 17                   | 40-50               | 12                | M           | G-12                               | F                             | G               | F    | F       | P      |
| Pine, Limber                       | 3              | A, B, E-J                             | 10                   | 20-40               | 9                 | S           | G-10                               | P                             | G               | F    | F       | P      |
| Pine, Lodgepole                    | 2              | A-D                                   | 17                   | 30-100              | 11                | M           | F-14                               | F                             | G               | P    | F       | P      |
| Pine, Ponderosa                    | 3              | A-D, F, J                             | 17                   | 50-130              | 12                | M           | G-10                               | F                             | G               | F    | F       | P      |
| Pine, Scotch                       | 3              | A-D, F, J                             | 17                   | 30-40               | 12                | M           | G-10                               | P                             | P               | G    | P       | P      |
| Spruce, Western White              | 2              | ALL                                   | 12                   | 40-70               | 9                 | S           | G-10                               | F                             | E               | F    | P       | P      |
| Spruce, Colorado Blue              | 2              | ALL                                   | 15                   | 50-70               | 10                | M           | G-10                               | P                             | E               | F    | P       | P      |
| Spruce, Engelmann                  | 2              | ALL                                   | 14                   | 80-130              | 10                | S           | F-15                               | 0                             | E               | F    | G       | P      |

R=Rapid M=Moderate S=Slow E=Excellent G=Good F=Fair P=Poor \*=Pollinator Friendly  
<sup>^</sup>Generalization of complex site interactions. Consult local experts.



## Useful References

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### Deciduous Shrubs

Russian almond, Nanking cherry, Centennial cotoneaster, Redosier dogwood, Western sandcherry, Silverberry, Skunkbush sumac, and Narrowleaf willow

USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota tree handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.

Curl-leaf mountain mahogany

USDA-NRCS PLANTS Database

Ninebark

Dave Powell, USDA Forest Service (retired), Bugwood.org

Saskatoon serviceberry, Silverberry, and Silver buffaloberry illustrations

USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. 3 vols. Charles Scribner's Sons, New York. Vol. 2: 293.

### Small Deciduous Trees

Ohio buckeye, Siberian crab apple, Arnold hawthorn, Chinese pear

USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota tree handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.

### Medium/Tall Deciduous Trees

Boxelder, Siberian elm, Common hackberry, American linden, White poplar, Black walnut, Golden willow

USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota tree handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.

Black cottonwood

Credit: Sheri Hagwood, hosted by the USDA-NRCS PLANTS Database

Black locust

Jennifer Anderson, hosted by the USDA-NRCS PLANTS Database

Paper birch

U.S. National Herbarium, Department of Botany, NMNH, Smithsonian Institution by permission from Howard, R.A.

### Conifers

Rocky Mountain juniper, Siberian larch, Lodgepole pine, Scotch pine, White (Black Hills) spruce, Colorado blue spruce

USDA-NRCS PLANTS Database / Herman, D.E., et al. 1996. North Dakota tree handbook. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Administration, Bismarck.

Douglas fir

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Western larch

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